

CLAIMS

What is claimed is:

1. An endolumenal stent system, comprising:
an endolumenal stent;
a porous surface on the endolumenal stent and having a plurality of pores; and
a composite material located within each of the pores and comprising a bioerodable material in combination with a bioactive agent.
2. The system of claim 1, wherein the composite material comprises a plurality of particles.
3. The system of claim 2, wherein the particles comprise an outer diameter that is less than about 5 microns.
4. The system of claim 2, wherein the particles comprise an outer diameter that is less than about 2 microns.
5. The system of claim 2, wherein the particles comprise an outer diameter that is less than about 1 micron.
6. The system of claim 2, wherein the particles comprise a bioerodable polymer in combination with the bioactive agent.

7. The system of claim 2, wherein:
the particles comprise an outer diameter;
the pores comprise an inner diameter; and
the inner diameter is substantially equivalent to the outer diameter.
8. The system of claim 1, wherein the pores comprise an inner diameter that is less than about 5 microns.
9. The system of claim 1, wherein the pores comprise an inner diameter that is less than about 2 microns.
10. The system of claim 1, wherein the pores comprise an inner diameter that is less than about 1 micron.
11. The system of claim 1, wherein the porous outer surface comprises a material that is inherently porous.
12. The system of claim 1, wherein:
the porous outer surface comprises a material that is not inherently porous; and
the pores are formed within the material.

13. The system of claim 12, wherein the pores are laser cut into the material.
14. The system of claim 12, wherein the plurality of pores are photochemically etched into the material.
15. The system of claim 12, wherein the plurality of pores are chemically etched into the material.
16. The system of claim 1, wherein the porous outer surface comprises a sintered material.
17. The system of claim 1, wherein:
the endolumenal stent comprises a scaffold constructed from a first material;
the porous outer surface comprises a coating material located on the first material; and
the pores are located within the coating material.
18. The system of claim 17, wherein the coating material comprises a non-polymeric material.
19. The system of claim 18, wherein:
the non-polymeric material comprises an electrochemically deposited material.

20. The system of claim 19, wherein the electrochemically deposited material comprises an electrolessly electrochemically deposited material.
21. The system of claim 20, wherein the electrolessly electrochemically deposited material comprises a composite material with a metal and a reducing agent of the metal.
22. The system of claim 21, wherein the metal comprises nickel.
23. The system of claim 22, wherein the reducing agent comprises phosphorous.
24. The system of claim 22, wherein the first material comprises a stainless steel alloy.
25. The system of claim 22, wherein the first material comprises a nickel-titanium alloy.
26. The system of claim 21, wherein the metal comprises cobalt.
27. The system of claim 26, wherein the reducing agent comprises phosphorous.
28. The system of claim 26, wherein the first material comprises a cobalt-chromium

alloy.

29. The system of claim 17, further comprising a second material between the first material and the coating material.

30. The system of claim 29, wherein the second material comprises an electroplated metal.

31. The system of claim 30, wherein the electroplated metal comprises electroplated nickel.

32. The system of claim 29, further comprising a third material between the second material and the coating material.

33. The system of claim 32, wherein:

the second material comprises electroplated metal;

the third material comprises a first layer of an electrolessly electrochemically deposited composite material with a metal and a reducing agent of the metal; and

the coating material comprises a second layer of an electrolessly electrochemically deposited composite material with a metal and a reducing agent of the metal, and further comprises the composite material.

34. The system of claim 1, wherein the bioactive agent comprises an anti-rest nosis agent.

35. The system of claim 1, wherein the bioactive agent comprises an anti-inflammatory agent.

36. The system of claim 1, wherein the bioactive agent comprises an anti-proliferative agent.

37. The system of claim 1, wherein the bioactive agent comprises an anti-proliferative agent in combination with an anti-inflammatory agent.

38. The system of claim 1, wherein the bioactive agent comprises des-aspartate angiotensin 1.

39. The system of claim 1, wherein the bioactive agent comprises at least one of sirolimus, tacrolimus, everolimus, paclitaxel, a steroid, exochelin, dexamethasone, nitric oxide, apocynin, gamma-tocopherol, an antibody, a growth factor, a combination or blend thereof, or an analog, precursor or derivative thereof.

40. The system of claim 1, wherein the ratio of the bioactive material to the bioerodable material in the composite material is at least about .5:1.

41. The system of claim 1, wherein the ratio of the bioactive material to the bioerodable material in the composite material is at least about 1:1.

42. The system of claim 1, wherein the ratio of the bioactive material to the bioerodable material in the composite material is at least about 1.5:1.

43. The system of claim 1, wherein the bioerodable material comprises a bioerodable polymer material.

44. An endolumenal stent system, comprising:

an endolumenal stent;

a plurality of composite particles coupled to the endolumenal stent;

wherein the composite particles comprise a bioerodable material in combination with a bioactive agent; and

wherein the composite particles are adapted to release the bioactive agent from the endolumenal stent when the endolumenal stent is implanted within a body of a patient.

45. A system for depositing a bioactive coating onto a surface of an endolumenal stent, comprising:

a coating environment;

a plurality of metal ions within the coating environment;
a plurality of particles located within the coating environment and that each comprises a bioactive agent in combination with a carrier material; and
wherein the coating environment is adapted to co-deposit the metal ions with the particles onto the endolumenal stent surface to form a composite surface coating when the endolumenal stent is exposed to the coating environment and such that the co-deposited composite surface coating is adapted to elute the bioactive agent therefrom when the surface is exposed to a body of a patient.

46. A system for depositing a bioactive coating onto a surface of an endolumenal stent, comprising:

a coating environment with a coating material;
a plurality of composite particles located within the coating environment and that comprise a bioerodable material in combination with a bioactive agent;
wherein the coating environment is adapted to co-deposit the coating material with the composite particles onto the surface so as to form a composite surface coating that is adapted to release the bioactive agent when exposed to a body of a patient.